

WHAT IS CLAIMED IS:

1. Apparatus for connecting fluid flowlines to a floating vessel, comprising a floating transfer structure supporting a plurality of fluid pipelines, a plurality of flexible fluid conduits, each with a proximal end attached to the transfer structure in fluid communication with the pipelines and a distal end attached to a common connector for releasably engaging with the floating vessel, the connector having a longitudinal axis which is substantially vertical in use, and wherein the connector is secured to a manipulator means mounted on the transfer structure, the manipulator means configured to allow the connector to rotate and to translate in two mutually perpendicular planes.
2. Apparatus as claimed in claim 1, wherein the manipulator means comprises a support tower extending upwardly from floating transfer structure, an arm projecting laterally from the tower, and a suspension member attached to the distal end of the arm and to which the connector is mounted.
3. Apparatus as claimed in claim 1, wherein the connector comprises a coupling device suspended therefrom by a winch mechanism operable to lower to the coupling device into engagement with the vessel and subsequently to pull the connector into engagement with the vessel.
4. Apparatus as claimed in Claim 1, wherein the connector comprises an aperture extending transversely therethrough and slideably receiving rigid end pieces attached to the distal ends of the flexible fluid conduits, wherein the end pieces are releasably connectable to the vessel to allow fluid flow from the flexible conduits to the vessel.

5. Apparatus as claimed in claim 2, wherein in use the arm is rotatable relative to the tower about a substantially vertical axis and is extendable and retractable in a substantially horizontal plane.

6. Apparatus as claimed in claim 2, wherein the suspension member, or part thereof, is extendible and retractable and rotatable about its longitudinal axis.

7. Apparatus as claimed in claim 2, wherein the suspension member is joined to the arm by a joint allowing rotation about two mutually perpendicular axes.

8. Apparatus as claimed in claim 2, wherein the suspension member, or part thereof, is extendible and retractable and rotatable about its longitudinal axis and the connector is joined to the suspension member by a joint allowing rotation about two mutually perpendicular axes.

9. Apparatus as claimed in claim 2, wherein the connector is joined to the suspension member by a joint allowing rotation about two mutually perpendicular axes and wherein the use arm is rotatable relative to the tower about a substantially vertical axis and is extendable and retractable in a substantially horizontal plane.

10. Apparatus as claimed in claim 3, wherein the suspension member, or part thereof, is extendible and retractable and rotatable about its longitudinal axis.

11. Apparatus as claimed in claim 3, wherein the connector is joined to the suspension member by a joint allowing rotation about two mutually perpendicular axes.

12. Apparatus as claimed in claim 3, wherein the connector is rotatable about its longitudinal axis relative to the suspension member by means incorporated in the connector.

13. Apparatus as claimed in claim 4, wherein the connector is joined to the
5 suspension member by a joint allowing rotation about two mutually perpendicular axes.

14. Apparatus as claimed in claim 4, wherein the connector is rotatable about its longitudinal axis relative to the suspension member by means incorporated in the connector.

10 15. Apparatus as claimed in claim 5, wherein the connector is joined to the suspension member by a joint allowing rotation about two mutually perpendicular axes.

16. Apparatus as claimed in claim 5, wherein the connector is rotatable about its longitudinal axis relative to the suspension member by means incorporated in the
15 connector.

17. Apparatus as claimed in claim 5, wherein the connector comprises an aperture extending transversely therethrough and slideably receiving rigid end pieces attached to the distal ends of the flexible fluid conduits, wherein the end pieces are releasably connectable to the vessel to allow fluid flow from the flexible conduits to the vessel.

20 18. Apparatus as claimed in claim 17, wherein the rigid end pieces include valve means to shut off fluid flow.

19. Apparatus as claimed in claim 18, wherein the connector comprises an aperture extending transversely therethrough and slideably receiving rigid end pieces attached to the distal ends of the flexible fluid conduits, wherein the end pieces are releasably connectable to the vessel to allow fluid flow from the flexible conduits to the vessel.
- 5 20. Apparatus as claimed in claim 19, wherein the rigid end pieces include valve means to shut off fluid flow and the connector is rotatable about its longitudinal axis relative to the suspension member by means incorporated in the connector.